HOVpfs

High Occupancy Vehicle Pooled Fund Study

Automated Vehicle Occupancy Verification Technologies

Project Fact Sheet - Aug 07

Purpose

High Occupancy Vehicle (HOV) and High Occupancy / Toll (HOT) lanes require effective enforcement policies and programs to operate successfully. Enforcement of vehicle-occupancy requirements is critical to protecting eligible vehicles' travel-time savings and safety. Visible and effective enforcement promotes fairness and maintains the integrity of the facility to help gain acceptance among users and non-users.

Vehicle-occupancy verification is a principal impediment to more efficient HOV lane enforcement. Electronic toll collection, license plate recognition and a myriad of other technologies have been developed and refined in recent decades to improve the integrity of enhanced transportation systems. However the target of many of these technologies has usually been the vehicle, and not the occupants. As a result, HOV facility operators have traditionally relied on field enforcement personnel to manage occupancy violations.

Given widespread plans for development of HOV lanes in a number of metropolitan areas, improved vehicle-occupancy verification techniques urgently need to be explored. The products resulting from this project serve as a layperson's guide towards identifying and implementing improved methods for automating occupancy monitoring, verification and enforcement.

The goal of the HOV Pooled-Fund Study (HOV PFS) is to assemble regional, state, and local agencies, and the Federal Highway Administration (FHWA) to

- identify issues that are common among agencies;
- suggest projects and initiatives;
- select and initiate projects intended to address identified issues;
- disseminate results; and
- assist in solution deployment.

Participating state transportation agencies include California, Georgia, Maryland, Massachusetts, Minnesota, New Jersey, New York, Tennessee, Virginia, and Washington.

Product: Automated Vehicle Occupancy Verification Systems White Paper

Now available! The Automated Vehicle Occupancy Verification Systems (AVOV) White Paper explores viable technologies for AVOV, defines a potential path for further development, and outlines a high-level concept of operations.

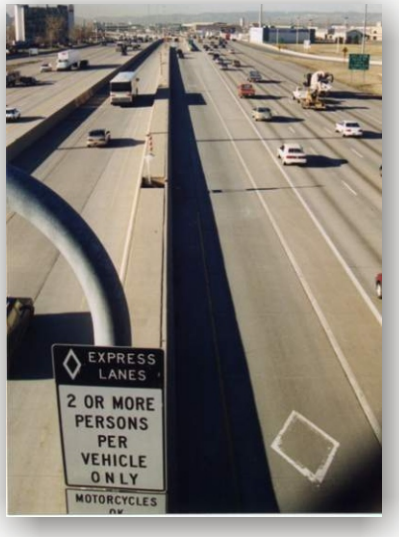
All products available at:
http://hovpfs.ops.fhwa.dot.gov/

U.S.Department of Transportation
Federal Highway Administration

HOV Pooled-Fund Study: AVOV White Paper

The main components of the AVOV White Paper are as follows:

- Multi-band near-infrared (NIR) imaging offers a highly reliable approach for capturing human images in the vehicle cabin using roadside cameras under high speed conditions. Although the potential for NIR occupancy verification has never been greater, no system has yet entered commercial production.
- In-vehicle occupancy verification systems that capture data from advanced airbag systems offer promise as a long-term solution. Research and development by the auto manufacturers in this area is very active, but barriers to transmitting the data to the roadside will have to be overcome.
- A path toward automated systems in a phased approach is suggested:
  - Near Term (2-5 years)
    - Develop roadside system for use as enforcement tool
    - Engage in Vehicle Infrastructure Initiative (VII) development to promote in-vehicle application
  - Intermediate Term (5-15 years)
    - Pursue legal authority for automated roadside system
    - Continue VII engagement and address public privacy concerns
  - Long Term (15-20+ years)
    - VII-based in-vehicle system for occupancy verification



- Typical privacy threats will be magnified with what may be considered an overly-intrusive approach. Advancing AVOV technologies toward a fully-automated approach will require that privacy threats be addressed, and public education will be crucial.
- The constitutionality of automated enforcement has been challenged many times, but in all cases the government has been upheld. Still, political support will be necessary for legal authority.

Proof of Concept and Testing Product

As an additional product, the HOV Pooled Fund Study has developed a problem statement for two-tiered procurement to support a proof-of-concept test and implementation of AVOV technologies in a HOV facility. A multi-agency approach to pooling funds for a private sector financial incentive could extend the value of the field test. The concept of operations provides a starting point for the procurement process.

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